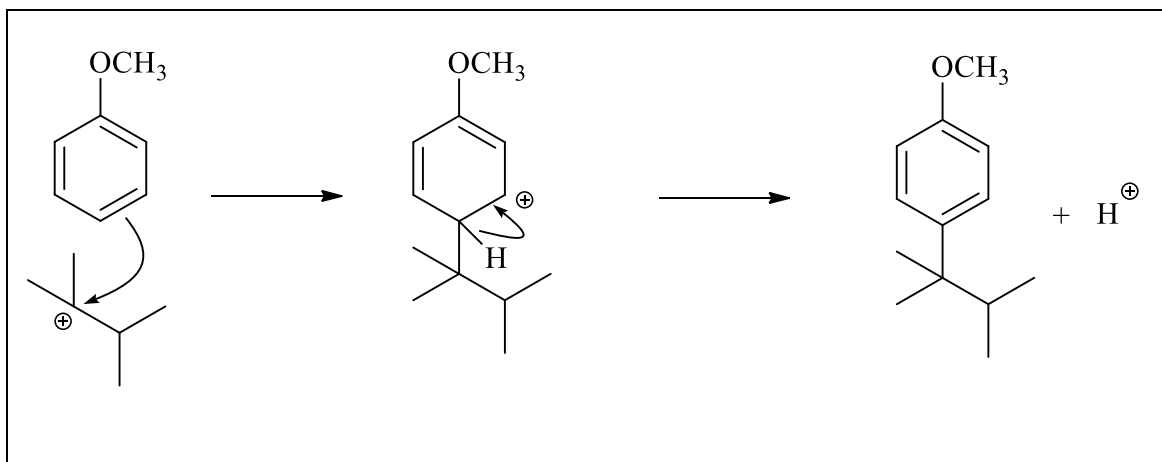
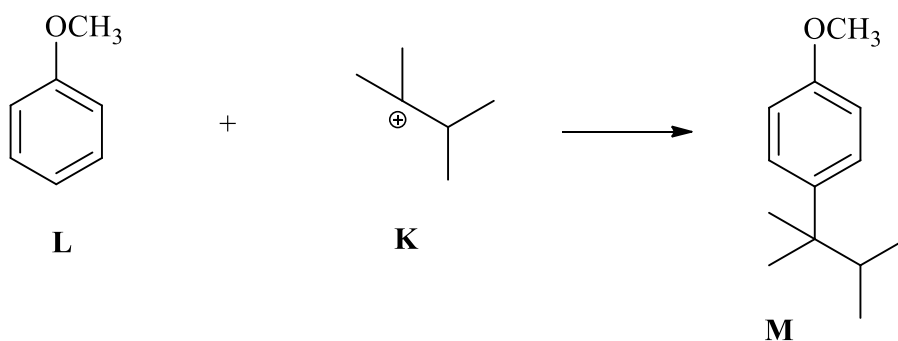


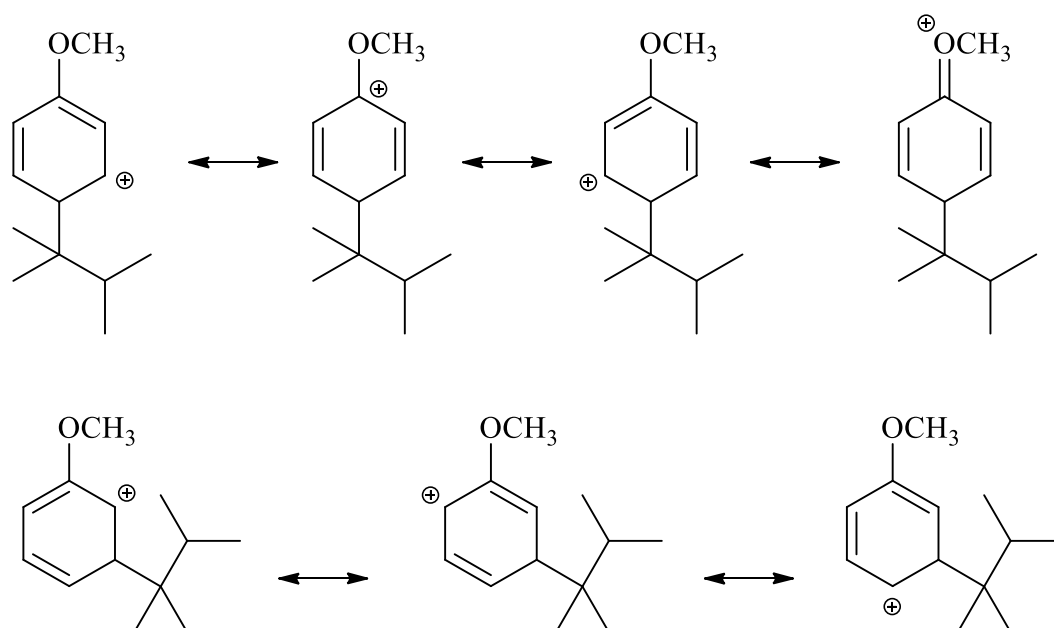
Reaction of **K** with anisole (methoxybenzene, **L**) gives **M** as the major product. Propose a mechanism for this transformation.

**Mark
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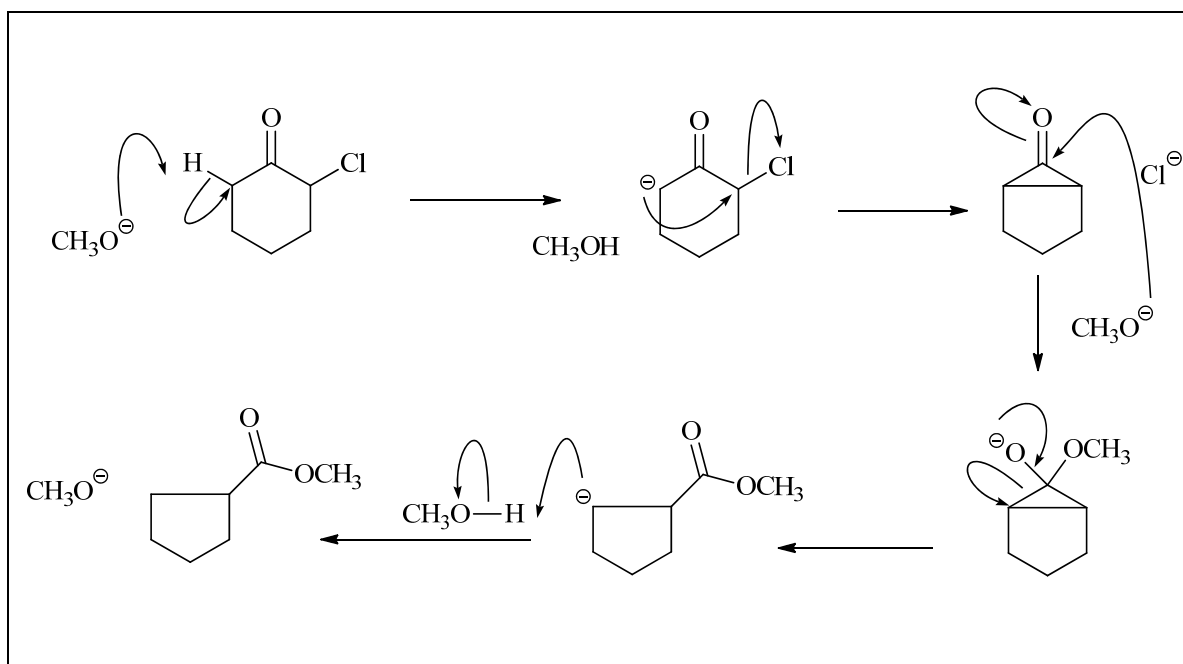


Briefly explain why the 4-substituted product **M** is formed preferentially.

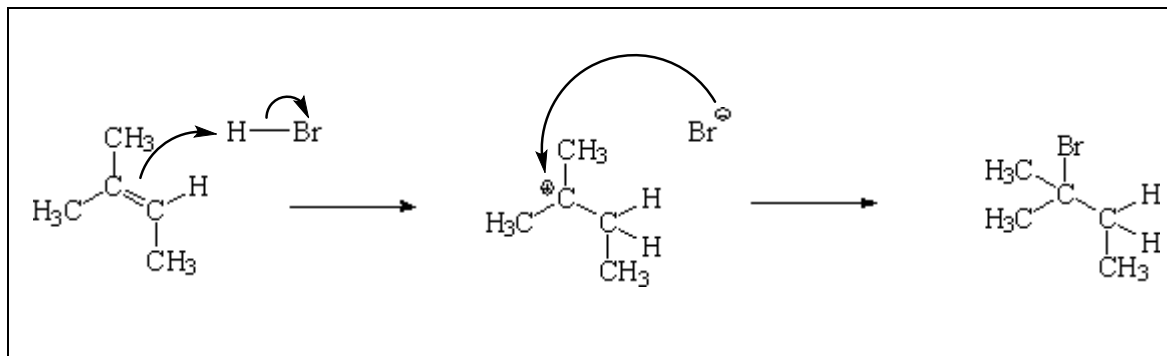
Substitution at positions 2 and 4 is favoured over position 3 due to the relative stabilities of the Wheland intermediates. There are 4 resonance contributors for substitution at positions 4 (or 2), but only 3 for substitution at position 3. Position 4 is favoured over position 2 due to steric effects - the methoxy group attached to C1 physically blocks approach of the attacking carbocation./



- Apply your understanding of 'curly arrows' to draw in the arrows required to complete a mechanism for the following reaction.



- The incomplete proposed mechanism for the reaction of 2-methyl-2-butene with HBr is shown below. Complete the mechanism by adding curly arrows to illustrate the bonding changes that take place.



Which one of the two reactants is the electrophile?

HBr